

EQUIPMENT REPORT

Ayon Audio CD-3sx CD Player/ DAC/Preamplifier

Class A Tube Satisfaction

Andre Jennings

From the time digital music became a mainstream format (in the early 80s), millions of CDs were produced, covering every genre of music. Owners of Red Book compact discs (like owners of LPs) are still eager to play and listen to the music stored on their silver discs. Ayon Audio's vacuum-tube-based CD-3sx plays those CDs, and many other modern digital music formats (PCM/DSD) as well.

The CD-3sx is a Class A vacuum-tube, top-loading CD player/DAC with added preamp capabilities for analog sources. It can serve as a CD player, a multi-input PCM/DSD-capable DAC, and an analog-input preamp. This much versatility allows the unit to take up residence in a broad range of systems.

The CD-3sx comes with a magnetic CD-clamp to hold the disc in place. Securing the smoked acrylic/aluminum transport cover on top of the CD transport engages a small pin/switch in the assembly that enables playback. In front of the transport, seven recessed, illuminated buttons (play/pause, stop, next track, previous track, volume-, volume+, input selection) allow you to control basic features. A display in the center of the front panel shows information for CD playback, active input, playback data rates, volume level, upsampling, and filter status. A hidden on/off toggle switch for power is located on the bottom panel towards the front of the unit centered between the Ayon logo and the left side of the display.

The rear panel of the CD-3sx houses all the interface connections (AC power, digital inputs, analog inputs, and analog outputs), in addition to four configuration selector switches. The CD-3sx has two RCA analog inputs available for connecting additional sources. Digital inputs are AES/EBU, coaxial, TosLink optical, I²S (RJ45), DSD on three BNC jacks (left data, right data, clock), and USB (rates up to PCM 24-bit/192kHz and DSD128). A single digital out (SPDIF RCA) connector is provided. In addition to the variable-level output jacks, a second pair of jacks provides a fixed-level output. The main analog outputs are provided for traditional connection to a preamp, integrated, or power amplifier in both RCA and XLR. The polarity selector switch allows the user to choose normal (0 degrees) or inverted (180 degrees) absolute polarity. The gain selection allows maximum output to be set at normal (RCA

2.5Vrms, XLR 5Vrms) or high (RCA 5Vrms, XLR 10Vrms). The analog-out mode allows the setting of normal (for connection to an integrated amplifier or preamplifier) and direct (for connection directly to a power amplifier). The remaining switch on the rear selects the output type—RCA, XLR, or both.

One of the main features of the CD-3sx is a custom-designed Class A triode output stage based on the 6H30 vacuum tube for both single-ended and balanced operation. Each channel's output stage uses its own circuitry and is physically separated from the other. The unit features a soft-start power-up (and warm-up) function to help extend tube life. Ayon claims the output impedance of the balanced and unbalanced outputs are both approximately 300 ohms. The company uses premium high-quality parts (capacitors, resistors, tube sockets, RCA/XLR jacks, and circuit board material) to improve performance. The

main power supply has separate R-core transformers to isolate the analog and digital sections. The 6H30 output section has vacuum-tube-based rectification and DC-regulated filament supplies. There are no fewer than ten separate voltage regulators that distribute power throughout the CD-3sx. Ayon says the vacuum tubes used in the unit are visually examined, burned-in, and analyzed at the



factory for plate current, transconductance, heater-to-cathode leakage, internal gas, and microphonic behavior in the tube-testing process. Because different tube manufacturers don't make tubes exactly the same way, Ayon doesn't encourage tube-rolling. It believes the CD-3sx has been optimized by its experts for the highly selected and matched tubes installed at the factory and that "they will provide many years of excellent audio performance." The 6H30 in the CD-3sx is expected to provide 8000 hours of service, but Ayon recommends replacement of the tubes after 5000–6000 hours of operation. Ayon believes high-quality craftsmanship, hand assembly, short/direct circuit paths, zero negative feedback, and minimalist design principles, among other improvements, make this unit the best-sounding CD player the company has built.

The digital section features the popular (and respected) ESS Technology ES9018 SABRE32 32-bit, hyperstream architecture, two-channel-audio D/A converter. In the CD-3sx, the ES9018 is configured to process digital signals up to a limit

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of 24-bit/192kHz PCM and DSD128 (double DSD). There is also a selectable sample-rate converter for any PCM input that can be enabled via remote control to upsample CD/PCM input data to 24/192 before feeding the signal to the ES9018 DAC. The CD transport has a DSP function which, when activated by the remote control, will output the CD data to the coaxial (SPDIF RCA) output and look for the CD data on the coaxial (SPDIF RCA) input. This loopback function allows the user to incorporate a digital room-correction or signal-processing device into the CD path between the digital output and input.

The supplied RC-3C remote control has additional features besides the standard CD playback controls mentioned above. Some of these functions are Dim (sets the front-panel display brightness), Input (input source selection), Mute, Volume, Vol Sel (fixed output or variable), L-Bal-R (balance adjustment), and 24/192 (enables 24-bit/192kHz upsampling). The Filter button allows selection of Filter1 (a slow roll-off filter that's said to sound smoother) or Filter2 (a fast roll-off filter that's said to sound more analytical).

The set-up adjustability of the CD-3sx enables the unit to be optimized for individual sound preferences. Consequently, I tested the player in most of the available configurations, including the balanced/unbalanced output connections, variable/fixed volume enabled, normal/direct amp, all digital inputs (except I²S), analog RCA inputs, 24/192 upsampling on/off, Filter1/Filter2, and DSP digital input-to-output loop-back. Every set-up configuration functioned as advertised with no issues or anomalies.

For the bulk of the evaluation, the CD-3sx was set to the fixed output mode (bypassing the analog volume control) in order to make use of a separate preamplifier. After initial comparisons, Filter1 was preferred, because of the perceived increase in soundstage depth. Gain was set to high for most listening, although the low setting had ample output. The polarity setting remained in the 0-degree position while the analog output was set to XLR, and 24/192 upsampling was turned off for most USB-sourced music listening, since I preferred to hear what each original sample rate was contributing to the sound.

Playing CDs with the CD-3sx was pretty straightforward and trouble-free: Turn the power on, make sure CD is the selected input, remove the CD lid and CD clamp, place the CD in the top-loading tray, replace the CD clamp and CD lid, select the track to be played, and press play. Analog-sourced vinyl feeding a dCS 904 A/D converter's 24-bit/96kHz and DSD outputs was used to briefly test the AES/EBU and DSD inputs. Both inputs synced the CD-3sx to the dCS 904 and were functional. The coax and optical interfaces were tested using the digital outputs of a Sony SCD-XA9000ES CD/SACD player. There was no I²S (RJ45) output source available during the evaluation period to test that connection.

The USB interface that receives data rates up to PCM 24/192 and DSD128 functioned flawlessly, but required a bit of hands-on setup of the computer and media server to get things going initially. The computers used for testing this interface were both Windows-based (Vista and Windows 7), so Ayon-specific drivers needed to be installed for the USB port to recognize the CD-3sx when connected. The installed USB drivers for the Windows 7 computer also worked for the Vista-based computer. Once the

SPECS & PRICING

Digital inputs: AES/EBU, SPDIF,

TosLink optical, I²S (RJ45),

DSD (three BNC jacks), USB

Analog inputs: Two RCA line level inputs

DSP loopback output: SPDIF

Analog outputs: Unbalanced RCA, balanced XLR

Output impedance: 300 ohms (unbalanced & balanced)

Dynamic range: > 118dB

S/N ratio: > 119dB

Power consumption: 85W

Dimensions: 48 x 12 x 39cm

Weight: 17 kg

Price: \$8100

AYON AUDIO USA

8390 E. Via De Ventura,

F110-194

Scottsdale, AZ 85258



USB drivers were installed, I was able to configure the output of the chosen media-server software to send the digital music data to the CD-3sx via the connected USB port. In this setup, digital music files stored on an external hard drive would serve to feed whichever computer was being used for testing during the evaluation period. The media software, used to access and send digital music over the USB interface to the CD-3sx, was JRiver Media Center version 20. While the configuration procedure is not within the scope of this report, JRiver was set up to send DSD (DSD64 and DSD128) and PCM (16-bit/44.1kHz through 24-bit/192kHz) data files to the CD-3sx. If a digital music file outside of these bounds was selected, it was up/downconverted to be within the acceptable range by JRiver before being sent over the USB interface to the CD-3sx.

Playing "The Real Blues" off the Ray Brown Trio's *Summer Wind: Live at the Loeb* album provided a good comparison for the CD-3sx coaxial, CD transport, and USB interface. Starting with CD playback from the Sony SCD-XA9000ES fed digitally over the coaxial input at 44.1kHz, the Ayon digital player produced a response that was satisfyingly full range with somewhat stronger bass and nearly as extended higher frequencies as the Sony's analog output alone. Moving the silver disc to the Ayon's own CD transport provided more fullness in the midrange without losses at either of the frequency extremes, which was a plus. Moving to a digital 24-bit/88.2kHz FLAC file of "The Real Blues" from the computer, the CD-3sx produced similar sound but with slightly less focus and perceived soundstage width. The digital file was a download that wasn't ripped from the CD; this may explain some of the noted differences. I spot-checked this observation with a downloaded 24-bit/88.2kHz file of "In the Morning" from Norah Jones' *Feels Like Home* compared to the 44.1kHz file ripped from a CD. (Both files were FLAC.) In this case, CD-vs.-24/88.2

results were similar to what I observed with the Ray Brown Trio. However, the CD playback vs. 44.1kHz ripped file were identical. This thought-provoking observation tends to support the notion that Ayon's CD-3sx playback of digital files derived from the same source is closer in sound than those retrieved by other means. This observation should not lead any readers to think higher-resolution files don't sound as good as (or better than) their lower-resolution cousins. One listen to Reference Recordings' 24-bit/44.1kHz vs. 24-bit/88.2kHz FLAC files of *Young Person's Guide to the Orchestra* from Britten's *Orchestra* played back over the USB input on the CD-3sx showed how a higher-resolution source proved to be superior in smoothness, depth, width, image specificity, bass definition, and instrumental realism. During multiple observations, the CD-3sx seems to easily reveal differences in the engineering and mastering of digital files, just as a good analog setup reveals those same differences with vinyl LP pressings.

Over USB, Kenny Rankin's voice on "Round Midnight" from the Chesky Records album *The World's Greatest Audiophile Vocal Recordings* (24-bit/96kHz FLAC) was rendered with a full, warm presence that projected directly at the listener; yet the surrounding ambience of the recording venue was still captured. This sparse arrangement, played back on the CD-3sx, produced sound that would most likely be considered reference quality by a listener. Pushing vocal performance further, Cassandra Steem's singing "The Living Daylights" from *Mister Bond: A Jazzy Cocktail of Ice-Cold Themes* (24/44.1 FLAC) sounded just as good as Rankin's in

"Round Midnight," yet her voice had more sultry lushness to it. The arrangement for this track was much denser, but every instrument could easily be followed and enjoyed. "The Living Daylights" is more upfront and has less dynamic range between loud and soft passages, but none of this seemed to interfere with the realism of the track. The percussion instruments sounded just as good as the vocals. There was no edge to vocals or instruments on either track.

The Grammy award-winning album *A Tribute to Miles* (24/44.1 FLAC) features premier jazz artists such as Herbie Hancock, Wayne Shorter, Ron Carter, Wallace Roney, and Tony Williams. On the CD-3sx, "All Blues (Live)" showcases each individual's delightfully crafted playing. The recording captures the mood of a live performance and a realistic impression of the audience. Whether it is trumpeter Wallace Roney's musings in remembrance of Miles Davis or other players' featured solos, this recording captures the imagination from beginning to end. Every aspect of this piece was more enjoyable when played from the computer over the USB interface to the CD-3sx.

I used a limited number of DSD files during the Ayon's evaluation period, including the *Opus3 DSD Showcase 2* sampler (DSD128). The digital file of Eric Bibb's "Needed Time" came closest to sounding like the same song on 45rpm vinyl (*Spirit & The Blues*) than any other digitally sourced version of an analog original. Played back on the CD-3sx, this recording captured the beauty of the harmonica and the separation of the strung instruments, while the delicacy of each remained intact, from

the fingerpicking to the slide and sustain of each string. Bibb's voice was depicted powerfully—rich and full with a touch of kindness as he sang this traditional blues spiritual.

As mentioned earlier, the Ayon's interface and controls functioned flawlessly. Even the supplied USB drivers for the two Windows-based computers proved to be completely stable without a single lockup caused by the CD-3sx. Complete stability from a vacuum-tube-based digital player with high-quality sound reproduction can be a pleasurable experience for many users. The additional benefit of intuitively well-designed user controls is a welcome bonus. There was no perception of the sharp-edged aggression that often plagues digital playback devices. The CD-3sx produced an immersive experience with the music, without pushing too much detail, which can, at times, distract the listener from the performance. Capable of handling nearly every digital format (with the exception of physical SACDs), this playback device can nestle down comfortably within nearly any stereo system and perform at a high level. **tas**

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